

THE Saturday Magazine.

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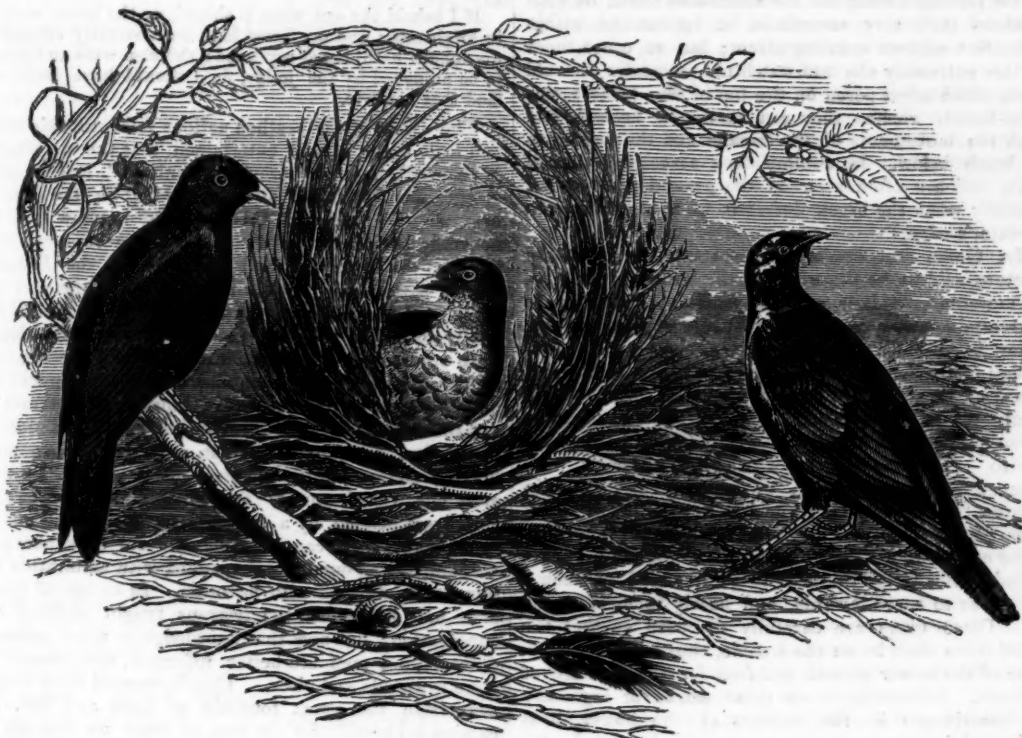
JULY

8TH, 1843.

PRICE
ONE PENNY



THE BOWER-BIRDS OF AUSTRALIA.



THE SATIN BOWER-BIRD.

I.

VERY beautiful are the examples of skill and ingenuity displayed in the architecture of birds, and most interesting it is to read the accounts of those who have studied from nature the varied forms under which the sagacity of the feathered tribes is exhibited. Whether we take up the history of the weaver-birds, and consider their patient working together of fine materials into the sort of hair-cloth lining which is found in many of their nests; or of the basket-making birds, the examples of whose skill are most conspicuous in countries where they suspend their nests, like so many cradles, from the branches of trees, or combine them in one large canopy firmly basked together, so as to be impenetrable to the rain; or, more curious still, of the tailor-birds knitting or sewing through and through in many directions the tough and flexible materials of which they make their nests; or whether we simply content ourselves with watching the proceedings of the window-swallow or martin, and take its careful working and plastering as the type of the habits of the mason-birds;—we have in each and every variety a beautiful development of the power imparted to this interesting portion of the animal world, in contriving and adapting means to certain ends, a power which we are scarcely accustomed to concede to beings less gifted than man.

In each of the instances of ingenuity to which we have adverted the design of the little architect was evidently to produce a secure and appropriate nesting-place, where her young might be best secured from the dangers to which, according to their habits and circumstances, they would be

particularly exposed. But in the case we have now selected for the information of our readers, we have the novel example of a bird constructing a beautiful bower, decorating it with the utmost care, bringing shells and pebbles from the rivers to add to its attractions, exhibiting, in fact, what among ourselves would be called *taste* and ornamental art—and all this, not to produce an abode for her progeny; but, as far as can be discovered, merely to afford a place of recreation and amusement for herself and her companions. The account of this bird is given in Gould's splendid work, *The Birds of Australia*, and as the author has been the first to remark the peculiar habits of the species in question, he is necessarily our sole authority for the following description.

The Bower-bird (*Ptilonorynchus Holosericeus*) is known to ornithologists and to the colonists of New South Wales generally, but its extraordinary habits had never been brought before the scientific world previously to Mr. Gould's notice of them. The Satin Bower-Bird is found in the luxuriant and thickly-foliaged brushes stretching along the coast from Port Philip to Moreton Bay, in the cedar brushes of the Liverpool range, and in most of the gullies of the great mountain-chain separating the colony from the interior. It appears to be restricted to New South Wales; "certainly," says Mr. Gould, "it is not found so far to the westward as South Australia, and I am not aware of its having been seen on the north coast; but its range in that direction can only be determined by future research."

These birds are not migratory, though they range from

one part of a district to another in search of their food, which consists almost exclusively of grain, and other vegetable substances. The brushes which the Bower-bird inhabit are studded with enormous fig-trees, some of them reaching to the height of two hundred feet. The small wild fig with which the branches are loaded yields them abundant provision; but the berry-bearing plants and shrubs, as well as the ripening corn which may be in the vicinity, are also made to contribute to their support. These birds appear to have particular times of the day for feeding among the low shrub-like trees; on such occasions they may sometimes be approached within a few feet without creating alarm; but at other times they are extremely shy and watchful, especially the old males, which often perch on the top of the loftiest tree in the forest, whence they can survey all around, and watch the movements of the females and the young in the brush below. In autumn they associate in small flocks, and are often seen on the ground near rivers, especially when the brush descends in a steep bank to the water's edge.

Mr. Gould first saw a specimen of the bower-like structure, said to be the work of the Satin Bower-bird, in a museum at Sydney, and this excited a strong desire to ascertain every particular relating to this peculiar feature in the bird's economy. On visiting the cedar brushes of the Liverpool range he at length discovered several of these bowers or playing-places. They were usually placed beneath the shelter of a tree in some retired part of the forest, and differed from each other in size. The manner in which the materials were arranged appears, however, to have been similar in all cases. The base was formed of sticks firmly interwoven into an extensive and somewhat convex platform. In the centre of the platform rose the graceful bower, formed of slender and flexible twigs arranged in such a manner as to curve inwards, and nearly to meet at the top. These twigs are carefully disposed so that the forked parts shall be on the outside, thus leaving the interior of the bower smooth and free for the passage of the birds. Interesting as are these marks of ingenuity and contrivance in the builders of the bower, it is further curious to learn that entrance is decorated with the most gaily-coloured articles that can be collected, such as the blue tail-feathers of the Rose-hill and Penantian parrots, bleached bones, snail-shells, &c. Some of these gay feathers are stuck in among the twigs; while others, with the bones and shells are strewn about near the entrances. Like our magpies in England, these birds are renowned for their propensity to pick up and fly away with any attractive object that comes in their way; so that when any small article is missing, such as the bowl of a pipe, &c., the natives always search the haunts of these birds in the hope of recovering it. Mr. Gould himself found at the entrance of one of these bowers a small neatly-worked stone tomahawk, an inch and a half long, together with some slips of blue cotton rags, which the birds had probably picked up at a deserted encampment of the natives.

These bowers seem to be a place of resort for many birds of both sexes, who being assembled there, run through and around the bower in a sportive and playful manner, and that so frequently that it is seldom or never deserted. It is not ascertained whether the bowers are frequented during the whole year or not. When they were seen by Mr. Gould it was evident that they had been recently renewed, but from the accumulated mass of sticks, &c., near the spot it appeared that this had been a favourite resort for many years. One of these bowers having been destroyed, it was soon re-constructed, and the birds engaged in the task were females. With much care and trouble Mr. Gould brought two fine specimens of the work of the Satin Bower-bird to this country, one of which he presented to the British Museum, and the other to the collection at Leyden.

THE INFLUENCES OF ASTRONOMY.

OF all the sciences, Astronomy is by far the most ancient; because the objects of it attracted the first notice of mankind, who, when they lost the knowledge of God, worshipped the great luminaries of heaven, as the source of being and the fountain of happiness. Thus we read in that exquisite specimen of primitive poetry which distinguished the earliest age of genius, the book of Job, in allusion to this idolatry which prevailed at that period:

If I beheld the sun when it shined, or the moon walking in brightness; and my heart hath been secretly enticed, or my mouth hath kissed my hand; this also were an iniquity to be punished by the judge, for I should have denied the God that is above.

The wisest of the heathen nations fell into this error, and little doubt can be entertained, that the polytheism of them all, however varied and enlarged, had no other origin than the idea of divinity residing in the host of heaven. To counteract this evil, and to show that the heavenly bodies were all the work of one supreme intelligence, the legislator and historian of the Hebrews dwells particularly upon the creation of the sun and moon, and their respective uses; after which he emphatically adds, that the same God "made the stars also."

In studying the interior construction of the heavens, all the powers of expression sink under the grandeur and magnificence of the picture. Innumerable strata of radiant stars, sparkling in parallel rows, and lost in immensity, seem to invest the universe like so many blazing zones, and to whatever point of the spacious arch our visual powers are directed, we are dazzled and overwhelmed by a series of successive and endless splendours. We cannot even cast our eyes above us without feeling our minds expanded with admiration and our hearts warmed with devotion. In an age of ignorance and barbarism the heavens taught idolatry and superstition; but now that knowledge is more generally diffused, and men are better informed, they should inspire gratitude and piety. They borrow all their brightness from the great fountain of light and life, and expend it liberally for our use, to teach us that all our endowments are likewise bestowed for the benefit of others as well as our own. We learn from their inviolable steadiness and order, the incalculable advantages of regularity in our conduct, and exactness in discharging the duties of life. Clouds may intercept their lustre, but cannot interrupt their tranquillity; and the upper regions are never more serene than while the lower are convulsed with storms!

The obedience of the clouds to the primary institutions of their Maker is a standing condemnation of our habitual aberrations from the laws which he prescribes and the precepts he enjoins. Their beauty, which arises more particularly from their answering so perfectly their respective destinations, reproaches our moral deformity, their harmony, our mutual dissensions, and their combined utility, our want of public and of private worth.

Under the direction of the heavens, navigation has long been cherished and improved to an astonishing degree. Through many a boisterous sea and stormy night the mariner has steered his course by no other guide than his compass and the stars, and to all they may become a source of pleasure and a chart of duty. The light of our days, and the ornament of our nights, are from the heavens; and why may not they be also converted into ministers of wisdom as well as objects of admiration? Their effulgence adorns our world and transports our hearts; they shed lustre and visibility on all about us, and we would have them as useful to the soul as to the body, and as improving to the heart as they are pleasing to the sight.—BASELEY.

EASY LESSONS ON REASONING.

LESSON XV.

PART I.

§ 1. THERE are some other technical-terms, which it is useful to be familiar with, and which we will therefore now proceed to treat of. They are such as are usually introduced in an earlier place, previously to the matter of the last five Lessons. But it has been thought better to postpone everything that was not indispensable for the right understanding of what has been said concerning the several forms of Syllogism.

A "Common-term," we have seen, is so called from its expressing what is *common* to several things; and is thence called also a "Predicable," inasmuch as it can be affirmatively-predicated in the same sense ["univocally"] of certain other terms. It is evident that the word "Predicable" is *relative*; i.e. denotes the *relation* in which some Term stands to some other, of which it can be predicated. And this relation is of different kinds: in other words, there are several *Classes* [or *Heads*] of Predicables.

When you are asked concerning any individual thing, "what is it?" the answer you would give, if strictly correct, would be what is technically called its "Species:" as "this is a *pen*;" "that is a *man*;" "this is a *circle*;" "that is a *Magnet*," &c.

And the Species of anything is usually described in technical language as expressing its "whole Essence;" meaning, the whole of what can be expressed by a *Common-term*: for it is plain that (as was formerly shewn) it is only by taking an *inadequate* view of an "Individual," so as to *abstract* from it what is common to it with certain other individuals, disregarding all that distinguishes it from them, (including its *actual existence* as a single object)—it is only then, I say, that we can obtain any *Common-term*.

§ 2. When the same question "what is this?" is asked respecting a *Species*, the term by which you answer, is, that Predicable which is technically called the "*Genus*" of that Species. As, "what is a *pen*?" answer "an Instrument;" [a *kind*, or *species* of Instrument] "what is a *circle*?" "a curvilinear-plane-figure:" so also "a *Magnet*" would be said to "a Species [or [kind] of Iron-ore," &c.

When you are asked "what kind of [or "what sort of"] instrument is a pen?" you would answer one "designed for writing;" this being what *characterizes* it, and distinguishes it from other instruments: "what kind of animal is Man?" the answer would be "rational;" as distinguishing the Species from other animals; "what kind of plane-curvilinear-figure is a circle?" answer, "one whose circumference is everywhere equidistant from the Centre;" which circumstance distinguishes it from an *Ellipse*: &c.

Such a Predicable then, is technically called the "*Difference*;" [or, by the Latin name, "*Differentia*"] in popular language, frequently, the "Characteristic," or the "distinguishing point." And the "Difference" together with the "Genus," are technically spoken of as "*constituting*" [making-up"] the "Species."

Any quality [or "attribute,"] which *invariably* and *peculiarly* belongs to a certain Species, but which yet is not that which we fix on as characterizing the Species, is technically called a "*Property*;" [or "*Proprium*"] of that Species. Thus "risibility" [or the faculty of laughter] is reckoned a "Property" of Man: one of the "Properties" of a Circle, is, that any angle drawn in a semi-circle, is a right-angle: &c.

The power of "attracting iron" might be taken up the "difference" [or "characteristic"] of a Magnet; and its "Polarity" as a "Property:" or again, this latter might be taken as its *Difference*, and the other, reckoned among its *Properties*.

For it is evidently a mere question of convenience,

which, in any such case, we fix on as the Characteristic of the Species we are contemplating. And either the one arrangement or, the other, may be the more suitable, according to the kind of pursuit we may be engaged in.

An Agriculturist, for instance (See Lesson VIII § 5) would not characterize each kind of plants in the same way as a Botanist, or again, as a Florist: no more would a Builder, and a Geologist, and a Chemist, characterize in the same way the several kinds of stones.

§ 3. Any Predicable which belongs to *some* (and not, to other) individuals of the same Species, [or which "may be present or absent, the Species remaining same"] is called an "*Accident*."

And these are of two kinds. A "*Separable-accident*" is one which may be *removed from the Individual*; [or, which may be absent or present, in that which we regard as one and the same individual] as, for instance (in an example formerly given) the "Sun" is regarded as the same individual thing, whether "rising," or "setting," or in any other situation relatively to the spot we are in: "rising" therefore, or "setting" are separable accidents of the Sun.

So also, to be in this or that *dress*, or *posture*, would be a separable-accident of an individual man; but to be a *native of France*, or of England, or to be of a certain *character*, would be "*inseparable-accidents*."

It is by inseparable-accidents that we commonly distinguish one Individual from another of the same Species. And to enumerate such Accidents is called "giving a *Description*." (See below § 10.)

Of course it is only from *individuals* that any "Accident" can be "inseparable;" for anything that is inseparable from a *Species*, [or, which forms a part of the signification of a Term by which we denote a certain Species] is not an Accident, but a *Property*.

§ 4. Some writers enumerate among Properties such Predicables as are *peculiar* but not *universal*; that is, which do not apply, each, to *every* individual of a certain species, but are *peculiar* to that species: as *Man alone* can be "virtuous,"—can be a "philosopher," &c. which are attributes not belonging to *every* man. But these are more correctly reckoned Accidents; tho' Accidents *peculiar* to the Species.

Some again speak of "Properties" which are *universal* but *not peculiar*; as "to breathe air" belongs to the *whole* human-species, but not to that species *alone*. Such a Predicable however is not, strictly speaking, a Property of the Species "Man," but a Property of a higher [more *comprehensive*] Species, "land-animal;" which stands in the relation of "*Genus*" to the Species "Man." And it would be called accordingly, in the language of some writers, a "*generic-property*" of Man. A Property, strictly so called, of any Species under our consideration, would be called, its "*specific-property*."

Predicables then have been usually divided into these five Heads: "Genus, Species, Difference, Property, and Accident."

You are to remember that, as every Predicable is so called *in relation* to the Terms of which it can be (affirmatively) predicated, so, each Common-term is to be regarded as belonging to this or that Head of Predicables, according to the Term to which it is, in each instance applied, or which may be applied to it. Thus the term "Iron-ore" is a *Species* in respect of the term "Mineral," and a *Genus* in respect of the term "Magnet;" and so, in other instances.

§ 5. When we "enumerate *distinctly*" [or separately.] the several things that are signified by one Common-term,—as the several Species included under some Genus—we are said to "*divide*" that Common-term. Thus, "natural-productions" are *divided* into "Animal, Vegetable, and Mineral;" and each of these again may be subdivided into several "members;" and so on.

Pernaps the word "*distinguish*," if it had been originally adopted, would have been preferable to "*divide*;" (which however has been so long in general use in this sense, that it could not now be changed) because "*Division*" being (in this sense) a *metaphorical* word, the "*Division*" we are now speaking of is liable to be confounded with "*Division*" in the other (which is the original and proper) sense of the word.

"*Division*," in its primary sense, means separating from each other (either actually, or in enumeration) the parts of which some really-existing single object consists: as when you divide "an animal" (that is, any single animal) into its several members; or again, into its "bones, muscles, nerves, blood-vessels," &c. And so, with any single Vegetable, &c.

Now each of the *parts* into which you thus "physically" (as it is called) divide "an animal," is strictly and properly a "*part*," and is *really* less than the whole: for you could not say of a bone for instance, or of a limb, that it is "an Animal."

But when you "*divide*"—in the secondary sense of the word (or, as it is called "metaphysically")—"Animal," that is the *Genus* "Animal," into Beast, Bird, Fish, Reptile, Insect, &c. each of the *parts* [or "members"] is metaphorically called a "*part*," and is, in another sense, *more* than the whole [the *Genus*] that is thus divided. For you may say of a Beast or Bird that it is an "Animal;" and the term "Beast" implies not only the term "Animal" but something more besides; namely, whatever "*Difference*" characterizes "Beast" and separates it from "Bird" "Fish" &c.

And so also any Singular-term [denoting one individual] implies not only the whole of what is understood by the Species it belongs to, but also more; namely whatever distinguishes that single object from others of the same Species, as "London" implies all that is denoted by the term "City" and also all that distinguishes that individual-city.

§ 6. The "*parts*" ["members"] in that figurative sense with which we are now occupied, are each of them *less than the whole*, in another sense; that is of *less comprehensive* signification. Thus the Singular-term "*Romulus*" embracing only an individual-king, is *less extensive* than the Species "*King*;" and that, again, less extensive than the *Genus* "*Magistrate*" &c.

An "*Individual*" then is so called from its being *incapable of being* (in this figurative sense) *divided*.

And tho' the two senses of the word "*Division*" are easily distinguishable when explained, it is so commonly employed in each sense, that, thro' inattention, confusion often ensues.

We speak as familiarly of the "*division*" of Mankind into the several races of "Europeans, Tartars, Hindoos, Negroes" &c. as of the "*division*" of the Earth into "Europe, Asia, Africa" &c. tho' "the Earth" [or "the World"] is a Singular-term, and denotes what we call *one Individual*. And it is plain we could not say of Europe, for instance, or of Asia, that it is "a World." But we can predicate "Man" of every individual European, Hindoo &c.

And here observe that there is a common colloquial incorrectness, (increasing the liability to confusion) in the use of the word "*division*," in each of these cases, to denote *one of the "parts"* into which the whole is divided. Thus you will sometimes hear a person speak of Europe as one "*division*" of the Earth; or of such and such a "*division*" of an Army: meaning "*portion*." And so again a person will sometimes speak of "animals that belong to the *feline division* of the Carnivora" [flesh-eating-animals] meaning, that *portion* of the Class "Carnivora."

[This Lesson will be concluded in the next Number.]

THE PHILOSOPHY OF FELTING.

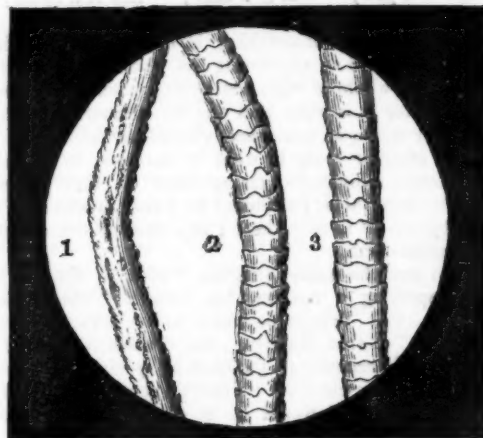
FILAMENTS OF WOOL, HIGHLY MAGNIFIED.

Fig. 1.



Australian Merino wool. Mr. McArthur's breed.

Fig. 2.



1 Leicestershire wool. 2 Finest Saxony wool.
3. Finest Spanish wool

A LITTLE attention to the philosophy of any great and important department of manufacture proves that the whole train of operations, whereby success is obtained, rests fundamentally on one single principle, without which all that precedes and follows would be useless. In woven fabrics, for example, whether silk, woollen, cotton, or linen, whatever care may be taken in the twisting and spinning of the threads, in the dyeing, in the pressing, fulling, bleaching, or printing (according to the material) or in the finishing processes, we shall find that the important principle involved, is the *interlacing* produced by the action of the loom. Every fibrous substance possesses more strength longitudinally than transversely; and the object of weaving is, so to arrange parallel fibres or threads, that whether the woven material be stretched lengthwise or breadthwise, there shall be fibres lying in the direction which will give most resistance. This effect, and the general coherence of the threads, result from the common process of weaving, to which every other process in these branches of manufacture is subservient.

So likewise in the very curious branch of manufacture relating to *beaver hats*, there is one single principle involved which outweighs in importance every other, and to which every other part of the manufacturing operations is subordinate. This principle is that of *felting*, a subject which may not unprofitably engage a portion of our attention.

Beaver hats are made generally of mixed wool and coarse fur, so entangled together as to constitute a firm foundation or support, and then covered with the fine fur of the beaver. The combining of the wool and coarse fur to form the foundation, and the covering with a layer of fine fur, are both examples of the curious process of *felting*. The hat-maker, after having prepared his wool and coarse fur in requisite portions, lays them on a bench in an equable layer, and separates them into two equal parts, each of a triangular shape, and about equal size. A piece of paper about half this size is then laid on one of the "batts" or layers of loose fur and wool; and the edges of the layer doubled over it. The other layer is then placed outside both; and the article produced is now formed of four triangular layers of loose but slightly coherent fur and wool laid one on another, with a piece of brown paper inserted between the two middle layers. The layers of wool and fur, before being laid one on another, are slightly pressed by the hand, which gives them just so much coherence as to make them hold together. The workman then proceeds to a work-bench to which is attached a vessel full of hot liquor. He wraps the triangular piece, called the "cap," in a damp cloth, and rolls and presses it for some time, to cause the fibres to adhere closely. He then dips the cap into the vessel of hot liquor, lays it on his bench, and subjects it for two hours to a continual rolling and unrolling, twisting, bending, squeezing, and friction, sometimes with the hand, and at other times with a small instrument which he fastens to the palm.

Now the effect produced by this long-continued working is that which constitutes felting; and is that on which the firmness of the hat depends. We must first bear in mind that the fibres of wool and fur are very short, and are mixed indiscriminately together, lying in every imaginable direction, upwards, horizontally, and oblique. The first gentle pressure of the hand, when quite dry, causes these fibres to cling together sufficiently to form a layer which may be turned over the piece of paper; the next pressure, effected when the layer is wrapped up in a damp cloth, greatly increases this close union of the fibres one among another; and the final working, by which the wool and fur are brought into that state which we call felt, gives to this union such strength and power that the separation of the fibres becomes a matter of much difficulty.

We then arrive at the question—What quality is it that gives this power of adherence to the fibres? Is there a glutinous substance on the surfaces—is there a chemical attraction between one fibre and another—or is there anything in the *form* of the fibre which leads to this intimate union? It is only in recent years that this matter has been satisfactorily explained; although the process has been adopted from the earliest times in the production of articles of clothing. It has been observed, that the Asiatic shepherds who sewed together the skins of animals to make themselves garments, could scarcely have avoided detecting the felting property of furry, hairy, or woolly fibres. The probable steps have been thus conjectured:—The tendency of matting, or felting, or entwining on certain parts of the living animals would be first taken notice of; and when these portions were separated from the fleece, curiosity or accident would discover that this process might be extended to a greater or less degree by beating, or by pressure, and that the wool would form a soft, and pliable, and warm substance, evidently fitted for human clothing; and far more comfortable, and more easily applicable to the wants of the individual and of society, than the skins that had been previously used. The felting property of wool would thus be developed; and that rude species of manufacture, by means of which the fleece used to be converted into cloth, would thus be invented and gradually improved.

But without attempting to trace the steps whereby

woollen clothing is rendered dependent on the property of felting, we will accept the fact as it stands, and see how its cause has been explained.

Those who have opportunities of examining a lock of wool, observe that it presents a much more crisped and spirally curled form than hair. This can be seen by holding a small lock of wool up to the light, when every fibre will be seen twisted into a ringlet or cork-screw form, especially when taken from the fleece of a short-woolled sheep. The goat, the Devonshire breed of cattle, some varieties of Highland cattle, the *yak* of Tartary, and the ox of Hudson's Bay, all present, in certain parts of their coat, a hairy or woolly fibre which possesses this curly form. Different kinds of sheep afford wool having a different degree of curvature or flexure in the curls; and it has been long known that the fibres which curl most are best calculated for the felting process. The curl materially contributes to that disposition in the fibres which enables them to attach and entwine themselves together; it multiplies the opportunities for this interlacing, and increases the difficulty of unravelling the felt. Still, however, it has long been known that although this curling assists very effectually in producing the effect of felting, it is not the principal agent concerned; it merely affords the fairest opportunity for the exertion of a property due to some other source.

Some writers on Natural Philosophy formerly thought that felting is due to a kind of attraction or cohesion between the fibres; that, as two very clean surfaces of lead will cohere strongly when pressed together, by virtue of the attraction of cohesion, so do the fibres of felt by an analogous power. Dr. Young says:—"The reason of the contraction of the cloth in felting is probably this, that all the fibres are bent by the operation of the fulling-hammers, but not equally, and those that have been the most bent are prevented by their *adhesion* to the neighbouring fibres, from returning to their original length." There is this defect in Dr. Young's explanation, that whether it be correct or not in reference to the "fulling" of cloth, where the fibres are beaten for hours by heavy hammers, it does not apply to hat-making, where the fibres are rubbed and not beaten.

The first circumstance which led to the detection of the true cause of felting, was the common observation, that if a filament or a small bundle of filaments of the finest wool be drawn through the finger and thumb, in a direction from the root to the extremity, it is evident that surface of the fibre feels smooth and regular; but that if the direction be reversed, a little more force is requisite, and it seems as if some rough or serrated body were drawn between the fingers. When the idea was started that this peculiarity of surface (although not discoverable by ordinary microscopic power,) might be connected with the phenomena of felting, many fanciful theories were built up. Mr. Bakewell imagined that the roughness or tremulous motion "might be caused by minute vibrations, more easily excited in one direction than another, owing to the peculiar arrangement of the particles, or of the small filaments which compose the substances of wool or hair." This opinion, however, is altogether untenable. A closer approach to correctness may be obtained by studying the philosophy of the sport, so familiar to every school-boy, of placing an ear of barley under the cuff of the sleeve, with the base or root uppermost towards the shoulder. The serrated edges of the beard, entangling in the clothes, prevent the ear from moving onwards in the direction of the hand; whereas the movement of the arm causes the ear to be gradually worked up the sleeve.

Monge, the celebrated French philosopher, was the first who satisfactorily explained the process of felting; but a letter written previously by Mr. Plint to Mr. Youatt, gave some very happy conjectures in the matter:—

Respecting the application of the microscope to the examination of the fibre, I am decidedly of opinion that a careful and minute examination of wools differing in their felting properties would issue in the detection of some specific difference of structure. This property is altogether inexplicable, at least in my mind, except in the supposition that the extreme surface of the fibre is irregularly feathered, and that, by compression, these feathered edges become entangled and locked together. These feathers must also point in one direction, viz., from the root to the extremity of the fibre; and if we suppose the feathered edge, or more properly speaking, the individual tooth or feather, to be of a firm texture, it is evident that one tooth being pushed into another, would fasten like a wedge; and if we further suppose that the tooth or feather has a barb, similar to that on a whale-harpoon, the phenomena of felting are explained.

By the aid of a very powerful microscope, it was discovered a few years ago, that wool has this feathered or serrated structure; the instrument was of 300 (linear) magnifying power; and the filaments of wool, seen through it, appeared to have teeth resembling those of a very fine saw. Different qualities of wool presented different forms of serrations, some of which are represented in our illustrations from Dr. Ure's work on the *Philosophy of Manufactures*.

Dr. Ure found that the fibres of wool and silk may be viewed with most advantage impasted in Canada balsam slightly thinned with oil of turpentine, for water does not assimilate well with their fibres, nor with their refracting power.

The filaments of wool so seen in a powerful achromatic microscope have somewhat of the appearance of a snake, with the edges of its scales turned out a little from the surface, so as to make the profile line of the sides look like a fine saw, with the teeth sloping in the direction from the roots to the points. Each fibre of wool seems to consist of serrated rings imbricated over each other, like the joints of equisetum. The teeth differ in size and prominence in different wools, as well as the annular spaces between them—the latter being in general from $\frac{1}{32}$ to $\frac{1}{16}$ of an inch, while the diameter of the filament itself may vary from $\frac{1}{100}$ to $\frac{1}{150}$. The transverse lines resemble a little the wrinkles of an earth worm, but they are less regular in their course. Were a number of thimbles with uneven edges to be inserted in each other, a cylinder would result not dissimilar in outline from a filament of Spanish merino wool,—the fleece in which this texture is best developed. In the finest Saxony wool, the articulated appearance is also prominent, and of course the serrated profile of the edges. They are, likewise, well marked in Mr. McArthur's best long combing wool. In the Leicestershire long staple, the serrations are very minute, and the cross markings indistinct.

The existence of these serrated and barbed edges to every filament of wool, fur, and hair (for the principle applies to all of these) renders the explanation of the process of felting comparatively easy. The hat-maker, when he has wrapped the "cap" in a damp cloth, presses the mass with his hands, moving them backwards and forwards in every direction. This pressure brings the filaments closely in contact, and multiplies their touching points. The agitation gives to each hair a progressive motion towards the root; but the roots are disposed in different directions; and the lamellæ of one hair will fix themselves on those of another hair which happens to be directed a contrary way. The hairs thus become linked or twisted together, and the mass assumes that compact form which it was the object of the workman to produce. In proportion as the mass becomes compact, the pressure of the hands is increased, not only to make the substance closer, but also to keep up the progressive motion and twisting of the hairs. Throughout the whole of this operation, the hairs fix themselves only to each other, and not to the linen cloth in which the "cap" is wrapped.

The "cap" here described, is not the beavered surface which a hat presents; it is the foundation, made in a conical form and of mixed wool and coarse fur. A

layer of fine beaver is then laid on this foundation, and is worked into it, or rather made to cling to its surface, by a process of felting nearly similar to that employed in the former stage. The shape is given to the hat after all these felting operations are finished.

Many of our readers may have seen announcements in the public prints relating to the sale of "felted cloth." This, whatever be the particular mode of manufacture, is only a further exemplification of the common process of felting. Fibres of wool are felted into a cloth or texture so stout and strong as to dispense with the process of weaving. Such at least is the avowed object, the excellence of which must be tested by experience.

•THE POSTMAN.

THE day has arrived—the city's full throng
Are passing like waves of the ocean along;
And some are all reckless, and some full of care—
Thoughtless hearts, and hearts aching, are fast mingling there,
But one, midst the crowd, with swift step pæceth on,
'Tis the Postman—the day of his toil has begun!

See how heedless he carries, just clasped in his hand,
Perhaps tidings to some from a far distant land:
The toils of ambition—a parent's fond fears—
Words breathing of gladness—lines calling up tears—
The worldly one's schemes—and the heart's warmest prayer,
All, all are commingled, all, all gathered there,
Yet heedless, uncaring, his step pæceth on,
For his toils are commencing, his day has begun.

He has paused—at the door of a rich one and great,
Where all speaks of grandeur, and glitter, and state;
There are letters addressed to the Lord of that Hall,—
What say they? Ambition's success, or its fall?
He gazes upon them—a cloud on his brow
And a shade on his keen eye is gathering now;
He sighs—but another before him is laid,
And sunshine beams forth from the midst of the shade,
His brow has no sternness, his dark eyes are mild,
And his voice whispers softly, "My fond one, my child."
Heedless, uncaring, the Postman toils on,
For the day of his labour is only begun.

He pauses, but now it is not as before,
For his footsteps have ceased at a low humble door,
And the form of the one who the letter receives
Bears traces—such traces as poverty leaves;
But oh! with what gladness, what heart-thrill g joy,
Does she gaze on those lines from her long absent boy.
Is sorrow remembered? is poverty known?
Oh, no! in her heart there is gladness alone.
But coldly, unheeding, the Postman toils on,
For he knows 'twill be long ere his labour is done.

His summons once more! and the mansion is neat,
And the little bright garden around it is sweet,
But brighter and sweeter the fair girl who flies
With the hope in her heart beaming forth in her eyes,
And the fair hand stretched forth the dear letter to clasp,
That letter, too dear for the bearer's rude grasp.
'Tis open'd—'tis read—and how deep is the glow
Suffusing the cheek and the bosom of snow:
How sweet are the tears which joy bids to arise,
And brighten the blue of those deep loving eyes—
She is loved! oh! no language can whisper how blest
Are those words to that trusting, true woman-like breast!
Yet coldly, unheeding, the Postman toils on,
For he knows 'twill be long ere his labour is done.

Again—and another fair face meets his view,
And features of hope and of joy telling true;
But alas! the hope fades, and the joy must depart
That letter speaks anguish and pain to her heart.
Has a loved one then gone to the rest of the tomb?
Oh, no! but more deep is the night of her gloom;
The letter is heartless—the language is cold—
It hath nought of the fondness, the feeling of old—
Her heart, she well knows, is unchanged, is still true—
But his love, oh! how little its lightness she knew;
In the hour she wept as she saw him depart
Little deemed she his falsehood should wither her heart!
Yet coldly, uncaring, the postman toils on,
'Twill be many an hour ere his labour is done.

He hath paced on more slowly; he pauses once more,
And again is his step at a wealthy one's door;
But the letter he brings is an ominous one,
And tells that the day of their grandeur is run,
That their riches were baubles—mere visions of air—
And nought is now left from those dreams but despair—
And the eye of the reader grows steadfast and dim,
For great is the blow which has fallen on him.
The laugh of his children, so welcome of late,
Seems but a mockery now of his fallen estate,
And all that was pleasure and gladness before
Seems crushing his spirit still lower and lower.
But unknowing, unthinking, the Postman toils on,
For his day, and the labour it brings, have begun.

Oh! in one little day, what mixed pleasure and woe
Doth the unconscious hand of the Postman bestow:
How many a heart boundeth high to his voice,
And hails it the signal to smile and rejoice!
And how many look anxiously, day after day,
For the form of the Postman to pause on his way,
He approaches—how high does the hoping heart leap,
He passes—they turn to their chamber and weep.
Oh! I know not a sickness which life can so shade,
As that of the spirit when hope is delayed—
And when 'tis delayed, as drear days pass along,
Oh! the heart that still bears up, indeed must be strong,
But unthinking of these things, the Postman toils on,
His fatigues are not over—his day is not done.

Who'er takes a letter, still sealed, in his hand,
And knows 'tis from one in a far di-tant land,
Yet feeleth no tremble, no doubt of the heart—
No fears, no anxiety o'er his mind dart!
Who is there, when hearing that dear ones are well,
Feels not his lip quiver, his grateful heart swell?
'Tis not weakness, but feelings the purest and best,
Which call those emotions to life in the breast—
The records of friendship—a parent's warm prayer,
A sister's fond breathings—are all mingled there,
With the words of remorse—letters blotted with tears,
And heart-wailing tones o'er the hopes of past years—
Ambition, love, sorrow, their language all pour—
Who shall trace all that springs from that much-varied store!
From the hour when the Postman his round has begun,
Till his toils are all over, his labours are done!

F. M. S.

[Brighton Guardian, May, 1843.]

THE man who is constantly engaged in the amusements, can scarcely ever escape the pollutions, of the world.—BISHOP PORTEUS.

THERE is no calling or profession however ensnaring in many respects to a Christian mind, provided it be not in itself simply unlawful, wherein God has not frequently raised up faithful witnesses who have stood forth as examples to others in like situations of the practicability of uniting great eminence in the Christian life with the discharge of the duties of their profession however difficult.

THE Christian's fellowship with God is rather a habit than a rapture. He is a pilgrim, who has the habit of looking forward to the light before him: he has the habit of not looking back: he has the habit of walking steadily in the way, whatever be the weather, and whatever be the road. These are his habits, and the Lord of the Way is his Guide, Protector, Friend, and Felicity.

READER! whoso'er thou art,
What thy God has given, impart;
Hide it not within the ground;
Send the cup of blessing round.

Hast thou power!—the weak defend.
Light!—give light; thy knowledge lend.
Rich!—remember Him who gave.
Free!—be brother to the slave.

Called a blessing to inherit,
Bless, and richer blessings merit:
Give, and more shall yet be given:
Love, and serve, and look for—Heaven!—CONDEX.

HISTORY OF LAURA BRIDGMAN.

II.

"DURING this year, and six months after LAURA BRIDGMAN had left home, her mother came to visit her, and the scene of their meeting was an interesting one. The mother stood some time gazing with overflowing eyes upon her unfortunate child, who, all unconscious of her presence, was playing about the room. Presently Laura ran against her, and at once began feeling her hands, examining her dress, and trying to find out if she knew her; but, not succeeding in this, she turned away as from a stranger, and the poor women could not conceal the pang she felt at finding that her beloved child did not know her. She then gave Laura a string of beads which she used to wear at home, which was recognised by the child at once, who, with much joy, put them around her neck, and sought me eagerly to say she understood the string was from her home. The mother now tried to caress her, but poor Laura repelled her, preferring to be with her acquaintances.

"Another article from home was now given her, and she began to look much interested; she examined the stranger much closer, and gave me to understand that she knew she came from Hanover; she even endured her caresses, but would leave her with indifference at the slightest signal. The distress of the mother was now painful to behold; for, although she had feared that she should not be recognised, the painful reality of being treated with cold indifference by a darling child, was too much for woman's nature to bear.

"After a while, on the mother taking hold of her again, a vague idea seemed to flit across Laura's mind that this could not be a stranger; she therefore felt her hands very eagerly, while her countenance assumed an expression of intense interest. She became very pale, and then suddenly red; hope seemed struggling with doubt and anxiety, and never were contending emotions more strongly painted upon the human face. At this moment of painful uncertainty, the mother drew her close to her side, and kissed her fondly, when at once the truth flashed upon the child, and all mistrust and anxiety disappeared from her face, as, with an expression of exceeding joy, she eagerly nestled to the bosom of her parent, and yielded herself to her fond embraces. After this the beads were all unheeded; the playthings, which were offered to her, were utterly disregarded; her playmates, for whom but a moment before she gladly left the stranger, now vainly strove to pull her from her mother; and though she yielded her usual instantaneous obedience to my signal to follow me, it was evidently with painful reluctance. She clung close to me, as if bewildered and fearful; and when, after a moment, I took her to her mother, she sprang to her arms, and clung to her with eager joy. The subsequent parting between them showed alike the affection, the intelligence, and the resolution of the child. Laura accompanied her mother to the door, clinging close to her all the way, until they arrived at the threshold, when she paused, and felt around, to ascertain who was near her. Perceiving the matron, of whom she is very fond, she grasped her with one hand, holding on convulsively to her mother with the other, and thus she stood for a moment; then she dropped her mother's hand, put her handkerchief to her eyes, and, turning round, clung sobbing to the matron; while her mother departed with emotions as deep as those of the child.

"It has been remarked, in former reports, that she can distinguish different degrees of intellect in others, and that she soon regarded almost with contempt a new comer, when, after a few days, she discovered her weakness of mind. This unamiable part of her character has been more strongly developed during the past year.

"She chooses for her friends and companions those children who are intelligent, and can talk best with her:

and she evidently dislikes to be with those who are deficient in intellect, unless, indeed, she can make them serve her purposes, which she is evidently inclined to do. She takes advantage of them, and makes them wait upon her, in a manner that she knows she could not exact of others, and in various ways she shows her Saxon blood.

"She is fond of having other children noticed and caressed by the teachers, and those whom she respects; but this must not be carried too far, or she becomes jealous. She wants to have her share, which, if not the lion's, is the greatest part; and if she does not get it, she says, 'My mother will love me!'"

"Her tendency to imitation is so strong that it leads her to actions which must be entirely incomprehensible to her, and which can give her no other pleasure than the gratification of an internal faculty. She has been known to sit for half an hour, holding a book before her sightless eyes, and moving her lips, as she has observed seeing people do when reading. She, one day, pretended that her doll was sick, and went through all the motion of tending it, and giving it medicine; she then put it carefully to bed, and placed a bottle of hot water to its feet, laughing all the time most heartily. When I came home she insisted upon my going to see it, and feel its pulse; and when I told her to put a blister on its back, she seemed to enjoy it amazingly, and almost screamed with delight.

"Her social feelings, and her affections, are very strong; and when she is sitting at work, or at her studies, by the side of one of her little friends, she will break off from her task every few moments to hug and kiss her with an earnestness and warmth that is touching to behold. When left alone, she occupies and apparently amuses herself, and seems quite contented; and so strong seems to be the natural tendency of thought to put on the garb of language, that she often soliloquizes in the *finger language*, slow and tedious as it is. But it is only when alone that she is quiet; for, if she becomes sensible of the presence of any one near her, she is restless until she can sit close beside them, hold their hand, and converse with them by signs. In her intellectual character it is pleasing to observe an insatiable thirst for knowledge, and a quick perception of the nature of things. In her moral character it is beautiful to behold her continual gladness, her keen enjoyment of existence, her expansive love, her unhesitating confidence, her sympathy with suffering, her conscientiousness, truthfulness, and hopefulness."

Such are a few fragments from the simple but most interesting and instructive history of LAURA BRIDGMAN. The name of her great benefactor and friend, who writes it, is Dr. Howe. There are not many persons who, after reading these passages, can ever hear that name with indifference.

A further account has since been published by Dr. Howe. It describes her rapid mental growth and improvement during twelve months more, and brings her little history down to the end of last year. It is very remarkable that as we dream in words, and carry on imaginary conversations, in which we speak both for ourselves and for the shadows who appear to us in those visions of the night, so she, having no words, uses her finger alphabet in her sleep. And it has been ascertained that when her slumber is broken, and is much disturbed by dreams, she expresses her thoughts in an irregular and confused manner on her fingers, just as we should murmur and mutter them indistinctly in the like circumstances.

I turned over the leaves of her diary, and found it written in a fair legible square hand, and expressed in terms which were quite intelligible without any explanation. On my saying that I should like to see her write again, the teacher, who sat beside her, bade her, in their language, sign her name upon a slip of paper, twice

or thrice. In doing so, I observed that she kept her left hand always touching, and following up, her right, in which, of course, she held the pen. No line was indicated by any contrivance, but she wrote straight and freely.

She had, until now, been quite unconscious of the presence of visitors; but, having her hand placed in that of the gentleman who accompanied me, she immediately expressed his name upon her teacher's palm. Indeed, her sense of touch is now so exquisite, that, having been acquainted with a person once, she can recognise him or her after almost any interval. This gentleman had been in her company but very seldom, and certainly had not seen her for many months. My hand she rejected at once, as she does that of any man who is a stranger to her; but she retained my wife's with evident pleasure, kissed her, and examined her dress with a girl's curiosity and interest. She was merry and cheerful, and showed much innocent playfulness in her intercourse with her teacher. Her delight in recognising a favourite play-fellow and companion—herself a blind girl—who silently, and with an equal enjoyment of the coming surprise, took a seat beside her, was beautiful to witness. It elicited from her at first, as other slight circumstances did twice or thrice during my visit, an uncouth noise which was rather painful to hear; but, on her teacher touching her lips, she immediately desisted, and embraced her laughingly and affectionately.

[DICKENS' *American Notes*.]

PRAYER.

FATHER! whate'er of earthly bliss
Thy sovereign will denies;
Accepted at thy throne of grace
Let this petition rise:
Give me a calm and thankful heart
From every murmur free:
The blessings of thy grace impart,
And let me live to Thee:
Let the blest hope that I am thine
My life and death attend—
Thy presence through my journey shine,
And crown my journey's end.—MRS. STEELE.

ASK St. Paul what it is that makes a Christian to be a great man. He will tell you that it is neither any natural accomplishment, nor any preternatural gift, but Charity. It is Charity alone that makes a man great; and the reason is this, that the excellence of all things and of all persons is measured by their utility. He who doth the most good, is the greatest man. Power, authority, dignity, honours, wealth, and station, these are so far valuable, as they put it into the hands of men to be more exemplary and more useful than they could be in an obscure and private life. But then these are means conducing to an end, and that end is goodness.—JORTIN.

SONNET.

THERE is a temple in the Christian's heart,
And every thought and feeling worships there;
Each sweetly sanctified maintains its part
In elevated praise or humble prayer.
Love lights the flame that on the altar burns;
Peace, Joy, and Gratitude, the choir compose;
Relying Faith to the one offering turns,
And there the tear of meek Repentance flows;
There Meditation ponders; Memory stands,
The works and wonders of her God to trace;
Devotion strengthens; glowing Zeal expands;
And Patience waits for new supplies of Grace.
Shut from the world that hidden fane how fair,
No outward storm can rend, no foe can enter there.—EDMISTON.

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